14 February 1963

MEMORANDUM FOR: All NPIC Division and Staff Chiefs
and
Military Senior Intelligence Officers

X1 SUBJECT: [redacted]

The attached proposal was prepared for NPIC by [redacted] 25X
They propose to provide up to 25 man-years of effort in support
of NPIC exploitation requirements. This level involves an esti-
X1 mated cost of [redacted] and contemplates a program of 16 months
duration. Since it shows a definite possibility of affecting all
components of NPIC and would have a significant effect on NPIC's
total development program, it is requested that you review it
X1 carefully. [redacted] has asked that a meeting of all concerned be
held at 10:30 Tuesday morning, 19 February, for the purpose of
discussing its implications. Please be fully prepared at that
time to voice your questions and comments concerning the proposal.
After the NPIC meeting a session will be scheduled with repre-
sentatives of the contractor. Your prompt attention to this will
be appreciated.

[redacted] 25X
Assistant for Plans & Development

Attachment

Declass Review by NGA.

11 FEB 1963

PROPOSED

STATEMENT OF WORK

1. Statement of Work

a. The Contractor shall provide the Government with development support which will lead to improved methods, techniques and equipment utilized in exploiting information obtained from various programs utilizing photographic sensors. In the performance of this work the Contractor shall investigate through studies, tests, and the fabrication and use of engineering breadboard equipment, new methods or devices which will further the State of the Art in photographic techniques and practices as it pertains to improved extraction of information from photographic materials.

b. The Contractor shall have the freedom to select or to agree to the technical areas best suited for expending this development effort; however, in instances where an expenditure of more than [redacted] is anticipated on a single task or item, the task or item will be identified as a "Significant Project." Each "Significant Project" shall require written approval of the Contracting Officer prior to exceeding this expenditure limitation. 25X1

c. Progress on all work underway and plans for the future will be reviewed quarterly by the Contractor for the Contracting Officer. Such reporting shall consist of:

1. A written brief informal summary report of activities of the past quarter, and

2. Such verbal elaboration as the Contracting Officer may desire.

Text and format for such reports will be left to the discretion of the Contractor.

d. Testing and evaluation of equipment under this development effort may be performed in the Government laboratory operated by the Contractor in his plant [redacted] All labor and burden costs for such testing and evaluation will be charged to and funded under this contract. 25X1

e. The Contractor will assign to the Government, in accordance with the Patent Rights Clause of this contract, the right to manufacture any equipment resulting from this contract. In this connection the Contractor shall release to the Government all technical data, drawings and prototype equipment developed under this contract. In this connection it is recognized that equipment developed will under this contract normally be of prototype or breadboard nature and, as such, may not be suitable for reproduction. The drawings referred to above are those utilized for making such prototype or breadboards.

2. Technical Areas of Investigation

The Contractor may, within the scope of this Work Statement, pursue such developmental activities in areas indicated below. Other areas of similar interest may also be explored.

a. Viewing Equipment
b. Projection Techniques
c. Color Enlarging
d. Data Handling ←
e. Image Enhancement
f. Clean Room Techniques
g. Light Sources
h. Mensuration Techniques

3. Level of Effort

The level of effort authorized in the performance of this contract shall not exceed twenty-five (25) man-years time. Said time shall include that of Scientists, Engineers and Direct Support personnel. This level of effort may be increased by mutual agreement.

Eng. people to be put to each area of research. How to direct + manage?

Nitz - 287 at NPIC

- IDC approvals? Hopefully not.

CFC
WFM
25X1
JWC

ELG.

"Preliminary Investigation" category - to cover investigation + travel + liaison costs - if a project develops which is assigned a job number, the money spent under "Prelim. Invest." will be charged against the job number.

25X1

Pers 7a 8 [redacted] people will need NPIC clearances.

8 Mar 63

11 February 1963

X1

[redacted]

In accordance with Work Statement Section 1b of contract [redacted] the items listed below and described in Attachment 1 are estimated to be "Significant Projects" and can be expected to exceed [redacted] per item. They are submitted for your consideration and approval as applicable areas of investigation for R and D effort.

The costs estimated below are those associated with engineering, testing analysis, and fabrication of breadboard hardware to determine feasibility and operating parameters of the techniques and approaches to be developed.

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Significant Projects

1. Frame by Frame Processor
2. Automation of I.R. Densitometer
3. Automatic Exposure Control Printer
4. Scanning and Recording Densitometer
5. Reversal Versamat
6. Evaluation of New Materials & Processes

[redacted]

Total Factory Cost

G & A

Fee

CPFF Price

Preliminary investigation in these areas has been initiated, but they will not proceed beyond the [redacted] level without your specific authorization. [redacted] other small R and D activities have also been started and can be described at the time of the first Quarterly Review Meeting. 25

Your early consideration will be appreciated.

Very truly yours,

[redacted] 25

Orig. + 4cc: J.P.

Attachment A

Essentially covered by SRL ders. w/ctrl [redacted] processor.

Technical Description of Projects

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1. Frame by Frame Processor.

At the present time a processing technique is employed which makes it possible to compensate for incorrect exposure settings in aerial photography. The fundamentals of this technique are, development of the image to the required gamma at a minimum photographic speed in a primary developer, and further development of selected subjects in a secondary developer to attain an optimum density level.

Processing machines available to exploit this technique are capable of varying secondary development in increments; however transition from one condition to another involves several frames of exposed material. The present trend toward small scale photography in which scene reflectance or exposure, changes rapidly from frame-to-frame, makes it imperative that equipment become available which has the ability to vary secondary development on a frame-by-frame basis with a transition length no greater than the distance between frames.

It is the purpose of this proposed project to investigate the means by which secondary development may be done on a frame-by-frame basis, design the necessary components to carry out these investigations and finally to build breadboard equipment to explore ideas evolving from the investigation.

2. Automation of I.R. Densitometer.

No SRL effort in this area or conflict w/ SSD's contract.

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The present I.R. Densitometer on the [redacted] Processor is semi-automatic, requiring operator attention to determine areas to be scanned and to carry out the instruction of the scanner. This development will produce apparatus which will automate the entire scanning operation as well as performing action at the command of the scanner output. The apparatus will be primarily electronic control circuits and I.R. detectors added to the present I.R. scanner.

3. Automatic Exposure Control Printer.

Almost identical to that proposed to NRO

Present day high speed continuous printers such as the Niagara printer can be manually set to a fixed exposure level but cannot vary the exposure within a single roll.

It is proposed to investigate and develop breadboard type apparatus which will exploit the possibilities for automatic control that do not involve dodging or changing the effective curve shape of the print material. This developmental control will be intended for installation on a continuous contact printer running at constant velocity with exposure controlled by modulation of the printing light source intensity.

4. Scanning and Recording Densitometer. No competitive proposal

In making quality prints from aerial photography much skilled operator time is required in spot densitometry of selected image areas, and computation of exposure prediction for the printer. We propose to develop a scanning densitometer capable of reading stationary or moving film and equipped with recording devices to aid in the exposure prediction. Successful completion of the development program will provide an engineering model capable of scanning selected areas of 70mm to 9-1/2-inch wide film and of providing graphs of pertinent data for exposure prediction. 25

5. Reversal Versamat. NPIC? → Should be our project

A requirement exists in the Photo Interpretation Community for a versatile photographic processing apparatus capable of developing both wide sheets and continuous strips of film to either a reversal or a standard negative image. Change from the reversal to the negative to the reversal processing cycle should be quickly and easily accomplished by turning valves, resetting switches and changing control set points in a minimum of time.

It is proposed to redesign existing solid through processing equipment to incorporate the reversal processing cycle in the machine and to incorporate the necessary valves, switches and control equipment to effect this change.

The operating speed of this processor will be approximately twenty inches per minute when used for reversal processing or approximately twenty feet per minute when used for standard negative processing. It will be capable of simultaneously processing two strands of material ranging from nine and one half inches wide down to seventy millimeters wide and three strands of material seventy millimeters wide and narrower. Over-all length of the machine will be approximately sixteen feet.

Attachment A

6. Evaluation of New Materials and Processes (Red Dot Tests)

As new and improved films and film-processing systems become available it is necessary to evaluate their applicability to specific reconnaissance systems and develop methods to determine proper exposure, latitude, spectral region, and processing. This task will include the necessary laboratory evaluation of the materials, reproduction processing, and analysis required for satisfactory evaluation of the materials.